

WHAT IS CLAIMED IS:

1. A method for manufacturing an electron-emitting device possessing an electroconductive film upon which an electron-emission region is formed,
5 wherein the formation process of formation of said electron-emission region includes a process of application of metal compound-containing material and film thickness controlling agent to the substrate.
- 10 2. A method for manufacturing an electron-emitting device according to Claim 1,
wherein the application process to said substrate is conducted by means of an ink-jet method.
- 15 3. A method for manufacturing an electron-emitting device according to Claim 2,
wherein the application process to said substrate conducted by means of an ink-jet method is conducted employing a plurality of ink-jet nozzles.
- 20 4. A method for manufacturing an electron-emitting device according to Claim 3,
wherein the application process to said substrate is conducted by means of ejecting said metal compound-
25 containing material and said thickness controlling agent from respective ink-jet nozzles.

5. A method for manufacturing an electron-emitting device according to any of Claims 1 through 4, wherein said metal-compound-containing material applied to said substrate is subsequently baked.

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6. A method for manufacturing an electron-emitting device according to any of Claims 1 through 4, wherein said metal-compound-containing material applied to said substrate is subsequently baked, and an
10 electron-emission region is formed at the electroconductive film formed by means of said baking.

7. A method for manufacturing an electron-emitting device according to Claim 1,

15 wherein said thickness-controlling agent is a decomposer to decompose said metal compound-containing material.

8. A method for manufacturing an electron-emitting device according to Claim 7,

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wherein said application process to said substrate is a process wherein said metal compound-containing material is applied and then subsequently said decomposer is applied.

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9. A method for manufacturing an electron-emitting device according to Claim 7,

wherein the application process to said substrate is conducted by means of an ink-jet method.

10. A method for manufacturing an electron-
5 emitting device according to Claim 9,

wherein the application process to said substrate conducted by means of an ink-jet method is conducted employing a plurality of ink-jet nozzles.

10 11. A method for manufacturing an electron-
emitting device according to Claim 10,

wherein the application process to said substrate is conducted by means of ejecting said metal compound-containing material and said thickness controlling
15 agent from respective ink-jet nozzles.

12. A method for manufacturing an electron-
emitting device according to Claim 11,

wherein said application process to said substrate
20 is a process wherein said metal compound-containing material is applied and then subsequently said decomposer is applied.

13. A method for manufacturing an electron-
25 emitting device according to any of Claims 7 through
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wherein said metal-compound-containing material

applied to said substrate is subsequently baked.

14. A method for manufacturing an electron-
emitting device according to any of Claims 7 through
5 12,

wherein said metal-compound-containing material
applied to said substrate is subsequently baked, and an
electron-emission region is formed at the
electroconductive film formed by means of said baking.

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15. A method for manufacturing an electron-
emitting device according to Claim 7,

wherein said decomposer is at least one type of a
decomposer selected from the following: reducing
15 decomposers, hydrolytic decomposers, catalytic
decomposers, and acid decomposers.

16. A method for manufacturing an electron-
emitting device according to Claim 15,

20 wherein said reducing decomposer is at least one
type selected from the following: formic acid,
aldehydes, and hydrazine.

17. A method for manufacturing an electron-
emitting device according to Claim 15,

25 wherein said catalytic decomposer is porous
aluminum oxide.

18. A method for manufacturing an electron-emitting device according to Claim 1,

wherein said film thickness controlling agent is an aqueous solution containing aqueous resin.

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19. A method for manufacturing an electron-emitting device according to Claim 18,

wherein said application process to said substrate is a process wherein aqueous solution containing said aqueous resin is applied and then subsequently said metal compound-containing material is applied.

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20. A method for manufacturing an electron-emitting device according to Claim 18,

wherein the application process to said substrate is conducted by means of an ink-jet method.

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21. A method for manufacturing an electron-emitting device according to Claim 20,

wherein the application process to said substrate conducted by means of an ink-jet method is conducted employing a plurality of ink-jet nozzles.

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22. A method for manufacturing an electron-emitting device according to Claim 21,

wherein the application process to said substrate

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is conducted by means of ejecting said metal compound-containing material and aqueous solution containing said aqueous resin from respective ink-jet nozzles.

5 23. A method for manufacturing an electron-emitting device according to Claim 22,

 wherein said application process to said substrate is a process wherein aqueous solution containing said aqueous resin is applied and then subsequently said
10 metal compound-containing material is applied.

 24. A method for manufacturing an electron-emitting device according to any of Claims 18 through 23,

15 wherein said metal-compound-containing material applied to said substrate is subsequently baked.

 25. A method for manufacturing an electron-emitting device according to any of Claims 18 through
20 23,

 wherein said metal-compound-containing material applied to said substrate is subsequently baked, and an electron-emission region is formed at the electroconductive film formed by means of said baking.

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 26. A method for manufacturing an electron-emitting device according to Claim 18,

wherein said aqueous resin is an acrylic acid derivative resin.

27. A method for manufacturing an electron-
5 emitting device according to Claim 18,

wherein said aqueous resin is an alcohol acid derivative resin.

28. A method for manufacturing an electron-
10 emitting device according to Claim 18,

wherein said aqueous resin is an cellulose acid derivative resin.

29. A method for manufacturing an electron-
15 emitting device according to Claim 18,

wherein said aqueous resin is a dextrin.

30. A method for manufacturing an electron-
emitting device according to Claim 1,

20 wherein said thickness-controlling agent is a decomposer to decompose said metal compound-containing material and an aqueous solution of aqueous resin.

31. A method for manufacturing an electron-
25 emitting device according to Claim 30,

wherein the application process to said substrate is conducted in the order of: application of said

aqueous solution of aqueous resin; application of said metal-compound-containing material; and application of said decomposer.

5 32. A method for manufacturing an electron-emitting device according to Claim 30,
 wherein the application process to said substrate is conducted by means of an ink-jet method.

10 33. A method for manufacturing an electron-emitting device according to Claim 32,
 wherein the application process to said substrate conducted by means of an ink-jet method is conducted employing a plurality of ink-jet nozzles.

15 34. A method for manufacturing an electron-emitting device according to Claim 33,
 wherein the application process to said substrate is conducted by means of ejecting said aqueous solution
20 containing aqueous resin, said metal compound-containing material, and said decomposer from
 respective ink-jet nozzles.

 35. A method for manufacturing an electron-
25 emitting device according to Claim 34,
 wherein the application process to said substrate is conducted in the order of: application of said

aqueous solution containing aqueous resin; application of said metal-compound-containing material; and application of said decomposer.

5 36. A method for manufacturing an electron-emitting device according to any of Claims 30 through 35,

 wherein said metal-compound-containing material applied to said substrate is subsequently baked.

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 37. A method for manufacturing an electron-emitting device according to any of Claims 30 through 35,

 wherein said metal-compound-containing material
15 applied to said substrate is subsequently baked, and an electron-emission region is formed at the electroconductive film formed by means of said baking.

 38. A method for manufacturing an electron-emitting device according to Claim 30,

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 wherein said decomposer is at least one type of a decomposer selected from the following: reducing decomposers, hydrolytic decomposers, catalytic decomposers, and acid decomposers.

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 39. A method for manufacturing an electron-emitting device according to Claim 38,

wherein said reducing decomposer is at least one type selected from the following: formic acid, aldehydes, and hydrazine.

5 40. A method for manufacturing an electron-emitting device according to Claim 38,

 wherein said catalytic decomposer is porous aluminum oxide.

10 41. A method for manufacturing an electron-emitting device according to Claim 30,

 wherein said aqueous resin is an acrylic acid derivative resin.

15 42. A method for manufacturing an electron-emitting device according to Claim 30,

 wherein said aqueous resin is an alcohol acid derivative resin.

20 43. A method for manufacturing an electron-emitting device according to Claim 30,

 wherein said aqueous resin is an cellulose acid derivative resin.

25 44. A method for manufacturing an electron-emitting device according to Claim 30,

 wherein said aqueous resin is a dextrin.

45. A method for manufacturing an electron source comprising: a substrate; and a plurality of electron-emitting devices arrayed upon said substrate;

wherein said electron-emitting devices are
5 manufactured according to any of Claims 1 through 4, 7
through 12, 15 through 23, 26 through 35, 38 through
44.

46. A method for manufacturing an electron source
10 according to Claim 45,

wherein said metal-compound-containing material
applied to said substrate is subsequently baked.

47. A method for manufacturing an electron source
15 according to Claim 45,

wherein said metal-compound-containing material
applied to said substrate is subsequently baked, and an
electron-emission region is formed at the
electroconductive film formed by means of said baking.

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48. A method for manufacturing an image-forming
apparatus comprising: a substrate; an electron source
comprised of a plurality of electron-emitting devices
arrayed upon said substrate, and an image-forming
25 member;

wherein said electron-emitting devices are
manufactured according to any of Claims 1 through 4, 7

through 12, 15 through 23, 26 through 35, 38 through
44.

49. A method for manufacturing an image-forming
5 apparatus according to Claim 48,

wherein said metal-compound-containing material
applied to said substrate is subsequently baked.

50. A method for manufacturing an image-forming
10 apparatus according to Claim 48,

wherein said metal-compound-containing material
applied to said substrate is subsequently baked, and an
electron-emission region is formed at the
electroconductive film formed by means of said baking.

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